

WE CLAIM:

1. A method in a computer system for automatically creating a list in an electronic spreadsheet, comprising the steps of:
 - 5 receiving a user request for selecting a cell range in the electronic spreadsheet for displaying data, the cell range including one or more cells in one or more columns;
 - identifying a list range for the selected cell range in the electronic spreadsheet;
 - 10 determining a header row for the list range; and
 - generating a border for surrounding the list range to create the list.
2. The method of claim 1, wherein identifying a list range for the selected cell range in the electronic spreadsheet comprises:
 - 15 determining the number of cells in the selected cell range;
 - if the selected cell range contains two or more cells, then identifying the list range as the selected cell range; and
 - if the selected cell range contains exactly one cell, then identifying the list range based on the location of the cell in a current region of the electronic
 - 20 spreadsheet.
3. The method of claim 1, wherein determining a header row for the list range comprises:
 - determining whether the list range includes a field name for each column
 - 25 in the cell range; and
 - if the identified list range does not include any field names, then automatically generating a field name for each column in the cell range.
4. The method of claim 3, wherein each field name is unique.
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5. The method of claim 1, wherein the list range includes user-generated data.

6. The method of claim 1, wherein the list range includes a blank row for inserting data.

7. The method of claim 5, further comprising:
determining whether the selected cell range includes a user total row for calculating a plurality of aggregation functions for the user-generated data; and
if the selected cell range includes a user total row, then excluding the user total row from the list range.

8. The method of claim 7, wherein the user total row is one row adjacent to the bottom of the at list range.

9. The method of claim 7, wherein the user total row comprises at least one cell for calculating the plurality of aggregation functions.

10. A method for automatically expanding a list in an electronic spreadsheet, the method comprising:

determining that at least one previously blank newly edited cell is adjacent to the list; and

automatically expanding the list to include the at least one previously blank newly edited cell.

11. The method of claim 10, wherein automatically expanding the list to include the at least one previously blank newly edited cell comprises automatically expanding the list to include a new column containing the at least one previously blank newly edited cell.

12. The method of claim 10, wherein automatically expanding the list to include the at least one previously blank newly edited cell comprises automatically expanding the list to include a new row containing the at least one previously blank newly edited cell.

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13. The method of claim 11, wherein determining that at least one previously blank newly edited cell is adjacent to the list further comprises:

determining that the at least one previously blank newly edited cell is adjacent to a header row in the list, the header row comprising at least one field name;
10 and

determining that the at least one previously blank newly edited cell is adjacent to a data row in the list, the data row comprising at least one cell containing data.

15 14. The method of claim 13, further comprising:

if the at least one previously blank newly edited cell is adjacent to a header row in the list, then determining whether a data entry in the at least one previously blank newly edited cell duplicates an existing field name in the header row in the list;

20 if the data entry in the at least one previously blank newly edited cell is identical to an existing field name in the header row in the list, then changing the data entry to a unique field name;

if the data entry in the at least one previously blank newly edited cell is not identical to an existing field name in the header row in the list, then assigning
25 the data entry as a field name for the new column; and

if the at least one previously blank newly edited cell is adjacent to a data row in the list, then automatically generating a field name for the new column.

15. The method of claim 10, wherein determining that at least one previously blank previously blank newly edited cell is adjacent to the list comprises determining
30 that the previously blank newly edited cell is to a right side of the list.

16. The method of claim 10, wherein the list is structured data.

17. A method for automatically validating data in a list in an electronic spreadsheet, the method comprising:

5 determining a data type of data entered into the list;
 comparing the data type of the data entered into the list to a list data type;

 if the data type of the data entered into the list does not match the list data type, then determining that the data type of the data entered into the list is invalid;
10 if the data type of the data entered into the list matches the list data type for the list, then determining the validity of the data entered into the list based on the data type; and

 if the data entered into the list is invalid based on the data type, then displaying an error indicator.

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18. The method of claim 17, wherein comparing the data type of the data entered into the list to a list data type comprises comparing the data type to a list data type for at least one cell in the list.

20 19. The method of claim 17, wherein comparing the data type of the data entered into the list to a list data type comprises comparing the data type to a list data type for at least one row in the list.

20 20. The method of claim 17, wherein the data is entered by typing the data
25 into an active cell in the list.

21. The method of claim 17, wherein the data is entered by pasting the data into a plurality of cells in the list, wherein the plurality of cells comprise an active cell and at least one inactive cell.

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22. The method of claim 20, wherein determining that the data type of the data entered into the list is invalid comprises displaying a data validation alert for the active cell in the list.

5 23. The method of claim 21, wherein determining that the data type of the data entered into the list is invalid comprises displaying an error indicator in the at least one invalid cell in the list.

24. The method of claim 17, wherein determining the validity of the data
10 entered into the list based on the data type for the list comprises determining that a data value is invalid for the list data type.

25. A display device having rendered thereon a spreadsheet including structured data, comprising:

15 a list range for displaying data in one or more columns;
 a header row for identifying at least one column in the list range; and
 a border for surrounding the list range.

26. The display device of claim 25, wherein the structured data further
20 comprises:

 an insert row following the list range for inserting data;
 a total row for entering a plurality of aggregation functions for
the data displayed in the list range; and
 a filter control for each column in the list range for filtering the
25 displayed data.

27. The display device of claim 26, wherein the insert row comprises an indicator for identifying an initial cell in the insert row.

30 28. The display device of claim 26, wherein the filter control is automatically applied to subsequent columns added to the list range.

29. The display device of claim 25, wherein the border comprises a handle for manually resizing the structured data.

30. The display device of claim 25, wherein the structured data has an active state and an inactive state.

31. The display device of claim 30, wherein the insert row and the filter control are invisible when the structured data is in the inactive state.

32. A computer-readable medium having computer-executable instructions for performing a method for displaying an automatically created list in an electronic spreadsheet, comprising the steps of:

receiving a user request for selecting a cell range in the electronic spreadsheet, the cell range including one or more cells in one or more columns for displaying data;

identifying a list range for the selected cell range in the electronic spreadsheet;

determining a header row for the list range;

generating a border for surrounding the list range to create the list; and

displaying the automatically created list on the display device.

33. The computer-readable medium of claim 32, wherein identifying a list range for the selected cell range in the electronic spreadsheet comprises:

determining the number of cells in the selected cell range;

if the selected cell range contains two or more cells, then identifying the list range as the selected cell range; and

if the selected cell range contains exactly one cell, then identifying the list range based on the location of the cell in a current region of the electronic spreadsheet.

34. The computer-readable medium of claim 32, wherein determining a header row for the list range comprises:

determining whether the list range includes a field name for each column in the cell range; and

5 if the identified list range does not include any field names, then automatically generating a field name for each column in the cell range.

35. The computer-readable medium of claim 32, wherein the list range comprises a blank row for inserting data.

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36. The computer-readable medium of claim 32, further comprising:

determining whether the selected cell range includes a user total row for calculating a plurality of aggregation functions for the user-generated data; and

15 if the selected cell range includes a total row, then excluding the user total row from the list range.

37. A computer-readable medium having computer-executable instructions for performing a method for automatically expanding a list in an electronic spreadsheet, comprising the steps of:

20 determining that at least one previously blank newly edited cell is adjacent to the list; and

automatically expanding the list to include the at least one previously blank newly edited cell.

25 38. The computer-readable medium of claim 37, wherein automatically expanding the list to include the at least one previously blank newly edited cell comprises automatically expanding the list to include a new column containing the at least one previously blank newly edited cell.

30 39. The computer-readable medium of claim 37, wherein automatically expanding the list to include the at least one previously blank newly edited cell

comprises automatically expanding the list to include a new row containing the at least one previously blank newly edited cell.

40. The computer-readable medium of claim 38, wherein data range
5 references in cells in existing list rows are automatically adjusted to include cells in the new column.

41. The computer-readable medium of claim 39, wherein data range
10 references in cells in existing list columns are automatically updated to include cells in the new row.

42. The computer-readable medium of claim 38, wherein determining that at
least one previously blank newly edited cell is adjacent to the list further comprises:

determining that the at least one previously blank newly edited cell is
15 adjacent to a header row in the list, the header row comprising at least one field name;

determining that the at least one previously blank newly edited cell is
adjacent to a data row in the list, the data row comprising at least one cell containing
data;

if the at least one previously blank newly edited cell is adjacent to a
20 header row in the list, then determining whether a data entry in the at least one
previously blank newly edited cell duplicates an existing field name in the header row
in the list;

if the data entry in the at least one previously blank newly edited
cell is identical to an existing field name in the header row in the list, then changing the
25 data entry to a unique field name;

if the data entry in the at least one previously blank newly edited
cell is not identical to an existing field name in the header row in the list, then assigning
the data entry as a field name for the new column; and

if the at least one previously blank newly edited cell is adjacent to a data
30 row in the list, then automatically generating a field name for the new column.

43. A computer-readable medium having computer-executable instructions for performing a method for automatically validating a list in an electronic spreadsheet, the method comprising the steps of:

determining a data type of data entered into the list;

5 comparing the data type of the data entered into the list to a list data type;

if the data type of the data entered into the list does not match the list data type, then determining that the data type of the data entered into the list is invalid and displaying a data validation alert;

10 if the data type of the data entered into the list matches the list data type for the list, then determining the validity of the data entered into the list based on the data type; and

if the data entered into the list is invalid based on the data type, then displaying an error indicator.

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